MACIEJ KOS

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PROFILE

Ph.D. student with a strong background in data analytics and behavioral sciences.
ACM/Intel Corporation Computational and Data Sciences Fellow

EDUCATION

Northeastern University, Boston, MA — 05/2020 (expected)
Ph.D. in Personal Health Informatics (GPA: 4.0)

University of Michigan, Ann Arbor, MI — 12/2012
Master of Arts in Information Science
(incentives-centered design and behavioral research focus)

Barcelona Graduate School of Economics, Barcelona, Spain — 06/2009
Master of Science in Economics of Science and Innovation

University of Gdansk, Sopot, Poland — 06/2005
Bachelor and Master of Arts in Economics and E-business

EXPERIENCE

Research Assistant at **College of Computer and Information Science, Northeastern University** (supervisor: Professor Misha Pavel), Boston, MA — 09/2015 – now

- Develops novel methods for analyzing physiological data (heart rate variability, galvanic skin response, body temperature) collected using wearables.
- Creates analysis pipelines (machine learning & statistics) for behavioral and neuroscientific data for an IARPA project focused on intelligence.

Investigator / Research Group Manager, Research Grant: Genetic health risk information avoidance (with Professors Richard Gonzalez, Dagmara Wach and Anna Blajer), Sopot, Poland & Boston, MA — 07/2013 – now

- Wrote a winning grant proposal ($77 000), conceptualized study, developed experimental research design, ran lab and online sessions of the experiment (n>900), analyzed data.
- Programmed experiment in Python (deployed on Google App Engine).

User Experience and research consultant at Agile Axons (self-employed), Gdynia, Poland and Rome, Italy — 01/2013 – 08/2015

- Helped design experiments and wrote software required to conduct them.
- Analyzed experimental data in Stata and R.
- Conducted user studies to assess usability of low- and high-fidelity UI/UX prototypes.
- Led a team of UI designers.
- Presented prototypes and final products to the C-level executives.

Graduate Research Assistant at **the School of Information**, **University of Michigan** (supervisor: Professor and Dean Jeff MacKie-Mason), Ann Arbor, MI — 08/2009 – 01/2012

- Designed, programmed and conducted experimental studies in behavioral economics (n>300).
- Analyzed data including performing ANOVA, MANOVA, contrast analysis, multivariate regression, logit and probit mixed-effects models with clustering and bootstrapping on cross-sectional and longitudinal data, and social networks using social network analysis.
- Visualized, reported and presented results.

Researcher/lecturer at **University of Gdansk**, Sopot, Poland — 10/2005 – 09/2009

- Designed and taught graduate courses on: e-commerce, web usability, Internet marketing and online communities.
- Initiated new bilateral agreements and coordinated an international student exchange program.

Localization tester at **Electronic Arts**, Madrid, Spain 06-09 of 2007&2008

- Provided legal, cultural and linguistic quality assurance for such products as FIFA 09 and Red Alert 3 as well as other projects including digital distribution and website testing.
- Partnered with language testing, engineering and production teams to solve localization issues.

Earlier positions include: IT content editor in Spain, Product Manager (intern) in Spain, Internet Marketing Specialist (intern) in Whitefish, MT, Marketing Manager in Poland

SELECTED PROJECTS

Research assistant, "Strengthening Human Adaptive Reasoning and Problem-solving Program", 2016 - now

- In this study subjects receive several types of brain stimulation when playing a video game over several weeks with the goal of improving their fluid intelligence.
- Responsible for analyzing, visualizing, and modeling large volumes of data on subjects' behavior and learning.
- Techniques used: PCA, t-SNE, hierarchical and spectral clustering, multilevel univariate and multivariate regression models, psychometric function, item response theory, deep learning / convolutional neural networks for EEG analysis (just starting).

Leading Research Assistant, "WearTech", in collaboration with Shepherd Spinal Cord & Brain Injury Rehabilitation Center, 2016 - now

- Developed a cutting-edge algorithm for improving the accuracy of heart rate variability estimates from wearable devices. Presented the algorithm at the American Medical Informatics Association convention.
- Conducted literature review of using heart rate variability and electrodermal activity to detect emotional stress, and designed the study.

Analyst (pro bono), "Child Aid Guatemala", 2016 - now

- The goal of this project is to increase literacy among children living in rural Guatemala.
- Contributes to the analysis of data coming from a large-scale field experiment by performing regression analysis (including item response theory) and reporting the results.

UX lead, "Digital Breeze", 2015

- Contributed to building a consumer-facing mobile application for a large Italian telco (in cooperation with Ericsson, McKinsey, and Monk Software).
- Conducted and analyzed surveys, semi-structured interviews, and usability tests to better inform UI/UX decisions and shape business processes, managed work of a UI team, interfaced between UI/UX and mobile development teams.

UX designer, "Lives of Dissidents", 2014

- Helped launch a charity project.
- Conducted card sorting (open and closed) sessions to design information architecture, performed usability studies and A/B tests.

SKILLS

Tools: R ●●●●●, Stata ●●●●●, Python ●●●●●, d3.js ●●●●●, Tableau ●●●●●, SQL ●●●●●

Statistics: ANOVA, MANOVA, contrast analysis, multilevel univariate and multivariate regression models, logit and probit mixed-effects models with clustering and bootstrapping on cross-sectional and longitudinal data, structural equation modeling, item response theory

Machine learning: PCA, factor analysis, t-SNE, hierarchical and spectral clustering, support vector machines, ridge regression, logistic classification, random forests, regression trees

Other: data visualization, psychometric function, social network analysis, deep learning / convolutional neural networks for EEG analysis (just starting out), UX research and UX design

Languages: Polish (native), Spanish (intermediate)

SELECTED AWARDS

- **ACM/Intel Corporation Computational and Data Sciences Fellowship**, 2017 - 2020
- 4th Annual Political Networks Conference and Workshops at the University of Michigan, 2011 - fellowship

- Barcelona Graduate School of Economics, 2008/2009 - merit-based full tuition waiver (12 000 EUR)
- Google Online Marketing Challenge Professor, 2008 - mentored two teams including the TOP Polish team (both of my teams ranked 70-89% worldwide)
- Erasmus Life-long Learning Grant, 2008 (1 900 EUR)
- University of Gdansk, 2007 (2000 USD) - grant to assess usability of selected academic websites
- Erasmus Socrates Mobility Grant, 2005 (1 850 EUR)

Pro Bono Service

- Poland Foresight 2020 national research program – External expert
- Northeastern University PhD task force, 2016 – representative of Personal Health Informatics program
- Rackham's International Connect, 2010/2011 – Mentor
- Baltic Science Festival, 2007/2008 – Departmental coordination team member

Recent Academic Papers and Presentations

- **Kos M.**, Gordon C., Li X., Khaghani-Far I., Pavel M., Jimison H. (2017). The Accuracy of Monitoring Stress from Wearable Devices. Poster presentation at the Annual American Medical Informatics Association Symposium, Washington, DC
- **Kos M.**, Li X., Khaghani-Far I., Gordon C., Pavel M., Jimison H. (2017). Can accelerometry data improve estimates of heart rate variability from wrist PPG sensors? Paper presentation at the 39th Annual International Conference of the IEEE Engineering in Medicine and Biology Society, South Korea
- McKanna J., **Kos M**., Plessow F., Dillard M., Almquist J., Kimball G., Myers E., Orhan U., Rampersad S., Marghi Y., Cornhill D., Brem A., Mansfield K., Yeung N., Thompson T., Santarnecchi E, Erdogmus E., Pascual-Leone A., Kadosh C. R., Mathan S., Pavel M. (2017). Components of cognition: identifying contributors to learning speed in a game training intervention. Poster presentation at xTech, San Francisco
- **Kos M.**, McKanna J., Pavel M., Dillard M., Almquist J., Kimball G., Brem A., Orhan U., Rampersad S., Cornhill D., Yeung N., Erdogmus D., Pascual-Leone A., Kadosh R., Mathan S. (2017). The impact of stimulus features on learning and accuracy in an adaptive category learning task designed to train fluid intelligence, Poster presentation at the Association for Psychological Science annual convention, Boston, MA
- **Kos M.**, Blajer-Gołębiewska A., Wach D., Pavel M., Gonzalez R. (2016). Decision-making under threat: what determines our engagement in preventive behaviors? Poster presentation at the Society for Judgment and Decision Making annual conference, Boston
- **Kos M.**, Blajer A., Wach D. (2015). When do we avoid health-risk information? Poster presentation at the Society for Judgment and Decision Making annual conference, Chicago
- **Kos M.**, Blajer A., Wach D. (2015). Identifying predictors of preventive behaviors using a financially incentivized experiment – a pilot study. Poster presentation at the 37th Annual North American Meeting of Society for Medical Decision Making, St. Louis